CD/2028

# Conference on Disarmament

27 July 2015

Original: English

**Australia**

**Working paper**

## Fissile material[1] types potentially relevant to FMCT verification[2]

[1] Aims to cover all of the main proposed fissile material definitions.

[2] Prepared by Mr. John Quinn, Ambassador of Australia to the Conference on Disarmament and Mr. Malcolm Coxhead, Director, Australian Safeguards and Non-Proliferation Office, Nuclear Non-Proliferation Section, Department of Foreign Affairs and Trade.

GE.15-12640 (E)

*1512640*

Please recycle

| | *Risk to FMCT* | *Value added to FMCT by verification of non-diversion* | *Verification challenge* | *Main facilities to be verified* |
|---|---|---|---|---|
| LEU in bulk forms such as UF6, UO2 | Risk for undeclared enrichment | "light" verification would be of value | methodologies available | enrichment, conversion and fuel fabrication facilities |
| LEU in non-bulk forms | Low risk for undeclared enrichment | low | methodologies available | fuel fabrication facilities and nuclear reactors |
| unseparated Pu, U-233 in irradiated fuel | Risk for undeclared reprocessing | "light" verification would be of value for fast breeder blanket fuel, otherwise low value | methodologies available[3] but for dry storage are challenging | nuclear reactors and off-site stores |
| separated plutonium, HEU and U-233 in bulk forms | Moderate to high risk for use in weapons | high | methodologies available,<br>new managed access approaches may be needed for some facilities2 | enrichment and reprocessing facilities, some fuel fabrication facilities |
| HEU, U-233 and plutonium in unirradiated fuels | Moderate risk for use in weapons | moderate | methodologies available2 | some conversion and fuel fabrication facilities, some nuclear reactor sites |
| separated Np, Am | Low to moderate risk for use in weapons | moderate | available methodologies may be adapted | reprocessing plants |
| small quantities of fissile material used for isotope production or in research | Low risk for use in weapons | low | methodologies available | isotope production facilities,<br>R&D laboratories,<br>locations outside facilities |
| fabricated unirradiated LEU naval fuel | Low risk for undeclared enrichment | low | necessary methodologies not yet developed, significant managed access issues need to be addressed | Small in number |
| HEU for naval fuel in bulk forms | Moderate to high risk for use in weapons | moderate-high | available methodologies may be adapted, but significant managed access issues need to be addressed | small in number |

[3] Measurement techniques for U-233 need to be developed.

| | *Risk to FMCT* | *Value added to FMCT by verification of non-diversion* | *Verification challenge* | *Main facilities to be verified* |
|---|---|---|---|---|
| fabricated unirradiated HEU naval fuel | Moderate risk for use in weapons | moderate | necessary methodologies not yet developed, significant managed access issues need to be addressed | small in number |
| 'excess' fissile material in weapons forms | High risk for use in weapons | high | necessary methodologies not yet developed, significant managed access issues need to be addressed, proliferation-sensitive information must be protected | small in number |